

## SEARCH REQUEST FORM

## Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 11-5-'02  
 Art Unit: 1752 Phone Number 305-0504 Serial Number: 09/922,723  
 Mail Box and Bldg/Room Location: 9B05 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

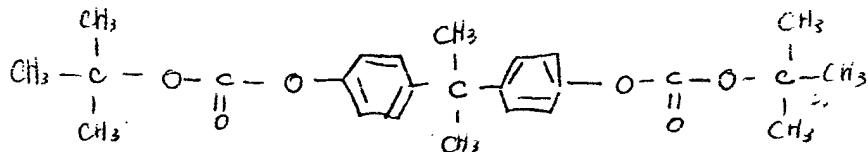
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Positive Resist Composition and Base Material Carrying Layer of  
Inventors (please provide full names): Ogata, Toshiyuki; Endo, Koutaro; Kornano, Hirashi.

Earliest Priority Filing Date: 08-07-'01

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

— Please search for a resist (or photoresist)  
 composition comprising a compound  
 of the following Structure



If too many, you can cross with  
 "a photoacid generator" or "PAG".

\*\*\*\*\*  
 STAFF USE ONLY

Type of Search	Vendors and cost where applicable
NA Sequence (#)	STN <u>X</u>
AA Sequence (#)	Dialog
Structure (#)	Questel/Orbit
Bibliographic	Dr. Link
Litigation	Lexis/Nexis
Fulltext	Sequence Systems
Patent Family	WWW/Internet
Other	Other (specify)

## SEARCH REQUEST FORM

## Scientific and Technical Information Center

Requester's Full Name: Sin J. Lee Examiner #: 76060 Date: 11-5-02  
 Art Unit: 1752 Phone Number 305-0504 Serial Number: 09/122,723  
 Mail Box and Bldg/Room Location: 2605 Results Format Preferred (circle):  PAPER  DISK  E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

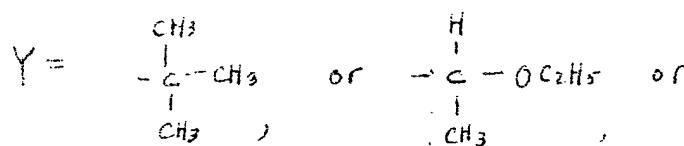
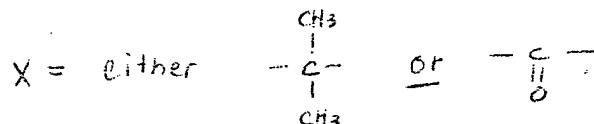
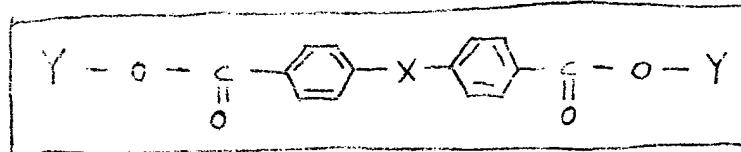
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Positive Resist Composition and Base Material Carrying Layer  
 Inventors (please provide full names): Ogata, Toshiyuki; Endo, Koutaro; Komuro, Hiroshi

Earliest Priority Filing Date: 08-07-01

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search for a resist (or photoresist) composition comprising a compound ~~of the following structure~~ having the following formula



(If too many, You can cross with a photoacid generator ("PAG"))

## STAFF USE ONLY

Searcher: Tiff Harrison

Searcher Phone #: 306-5429

Searcher Location: CP4-9C18

Date Searcher Picked Up: 11-7-02

Date Completed: 11-7-02

Searcher Prep & Review Time: 20

Clerical Prep Time:

Online Time: 10

## Type of Search

NA Sequence (#) \_\_\_\_\_

## Vendors and cost where applicable

STN

AA Sequence (#) \_\_\_\_\_

Dialog \_\_\_\_\_

Structure (#) 1

Questel/Orbit \_\_\_\_\_

Bibliographic \_\_\_\_\_

Dr.Link \_\_\_\_\_

Litigation \_\_\_\_\_

Lexis/Nexis \_\_\_\_\_

Fulltext \_\_\_\_\_

Sequence Systems \_\_\_\_\_

Patent Family \_\_\_\_\_

WWW/Internet \_\_\_\_\_

Other \_\_\_\_\_

Other (specify) \_\_\_\_\_

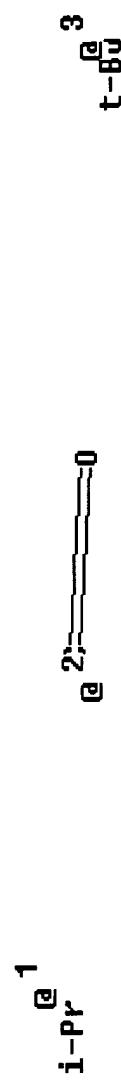
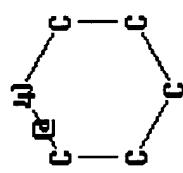
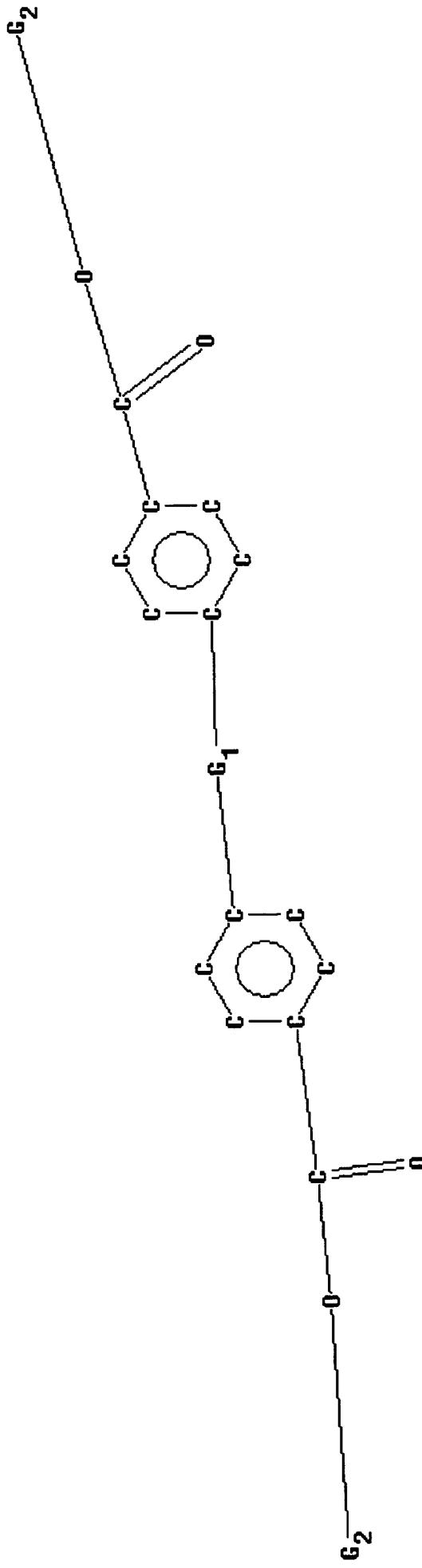
L1 FILE 'REGISTRY' ENTERED AT 15:50:13 ON 07 NOV 2002  
L2 STRUCTURE uploaded  
L2 O S L1 SAM

L3 FILE 'REGISTRY, MARPAT, MARPATPREV, CAPLUS' ENTERED AT 15:51:00 ON 07 NOV 2002  
L4 O S L1 SSS SAM FILE=REGISTRY  
L4 13 S L3 SSS SAM FILE=MARPAT

L5 FILE 'STNGUIDE' ENTERED AT 15:52:42 ON 07 NOV 2002

L6 FILE 'REGISTRY, MARPAT, MARPATPREV, CAPLUS' ENTERED AT 15:53:42 ON 07 NOV 2002

L7 13 S L1 SSS FUL FILE=REGISTRY  
L8 614 S L5 SSS FUL FILE=MARPAT  
L9 0 S L6 SSS FUL FILE=MARPATPREV  
L10 23 S L5 FILE=CAPLUS  
L11 SET DUPORDER FILE  
L12 635 DUP REM L7 L6 L8 (2 DUPLICATES REMOVED)  
L13 4353 S PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENERAT#####  
L14 3 S L8 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L15 1 S L6 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L16 0 S L7 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L17 1 S L12 AND L6 FILE=MARPAT  
L18 0 S L13 AND L7 FILE=MARPATPREV  
L19 4 DUP REM L15 L14 L11 (0 DUPLICATES REMOVED)  
L20 3 S L8 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L21 1 S L6 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L22 0 S L7 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L23 1 S L18 AND L6 FILE=MARPAT  
L24 0 S L19 AND L7 FILE=MARPATPREV  
L25 4 DUP REM L21 L20 L17 (0 DUPLICATES REMOVED)  
L26 11 S L8 AND (RESIST OR PHOTORESIST) FILE=CAPLUS  
L27 6 S L6 AND (RESIST OR PHOTORESIST) FILE=CAPLUS  
L28 0 S L7 AND (RESIST OR PHOTORESIST) FILE=CAPLUS  
L29 6 S L24 AND L6 FILE=MARPAT  
L30 0 S L25 AND L7 FILE=MARPATPREV  
L31 17 DUP REM L27 L26 L23 (0 DUPLICATES REMOVED)  
L32 11 S L22 OR L28 FILE=CAPLUS  
L33 11 S L8 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L34 6 S L6 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L35 0 S L7 AND (PAG OR PHOTOACID##### GENERAT##### OR (PHOTO ACID GENE  
L36 6 S L31 AND L6 FILE=MARPAT  
L37 0 S L32 AND L7 FILE=MARPATPREV  
L38 17 DUP REM L34 L33 L30 (0 DUPLICATES REMOVED)



L35 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2002:503937 CAPLUS

DN 137:85931

TI Photopolymerizable compositions containing bicyclo compounds having methine bonds and recording materials using the compositions

IN Sugiyma, Takekatsu; Matsumoto, Hirotaka; Takashima, Masanobu

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 52 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002189295	A2	20020705	JP 2000-388280	20001221

OS MARPAT 137:85931

AB The compns. comprise polymerizable compds. and  $I_1$ -Q = pigment-forming group;  $L_1, L_2$  = (un)substituted methine, the substituents may form unsatd. aliph. ring or heterocycle;  $m = 0, 1$ ; X = group for forming (un)satd. heterocycle contg. 2 S atoms condensed with a (un)substituted heterocycle represented by  $Y_n$ ; Y = O, S, N; n = 1-4]. The compns. may also contain compds. generating radicals or cations by reaction with I. Recording materials with layers contg. a coloring component A, a coloring component B having groups which color on their reaction with A, and the above stated photopolymerizable compns. are also claimed. Clear black-and-white or color images, suitable for printing plates, resists, holograms, etc., are obtained by a dry process.

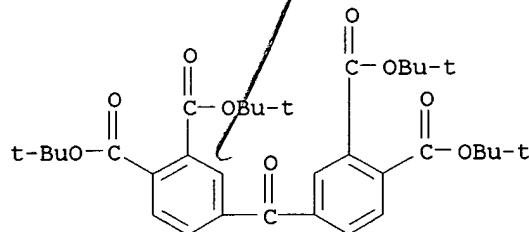
IT 128553-67-3

RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(polymn. initiator; formation of clear and high-contrast images by dry process using photopolymerizable compns. contg. methine dyes)

RN 128553-67-3 CAPLUS

CN 1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, tetrakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 1 OF 17 MARPAT COPYRIGHT 2002 ACS  
AN 136:316938 MARPAT  
TI Positive resist composition and process for forming resist pattern using  
photosensitive laminate  
IN Okubo, Waki; Sato, Kazufumi; Nitta, Kazuyuki; Ogata, Toshiyuki  
PA Japan  
SO U.S. Pat. Appl. Publ., 16 pp., Cont.-in-part of U.S. Ser. No. 651,099.  
CODEN: USXXXCO  
DT Patent  
LA English  
FAN.CNT 2

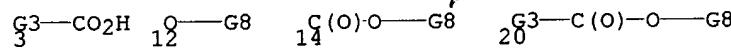
PATENT NO.		KIND	DATE	APPLICATION NO.	DATE
PI	US 2002045123	A1	20020418	US 2001-799549	20010307
	JP 2001142217	A2	20010525	JP 2000-263211	20000831
PRAI	JP 1999-245684	19990831			
	US 2000-651099	20000830			
	JP 2000-263211	20000831			

AB The present invention relates to a photosensitive laminate including a substrate and a 500-5800 angstroms thick photoresist layer formed on the substrate. A compn. for the resist layer includes (A) a compd. which generates an acid upon irradn. with radioactive ray; (B) an alkali-sol. novolak resin; and (C) a compd. having at least one acid-decomposable dissoln.-Inhibiting group, and the dissoln.-inhibiting group is decomposable by action of an acid generated from the ingredient (A) to yield an org. carboxylic acid. This photosensitive laminate is sequentially subjected to selective exposure to KrF excimer laser light or to light having a short wavelength equal to or less than that of F2 laser, post-exposure baking, and developing with an alkali to yield a resist pattern.

MSTR 1

G1—G4

G1 = Ph (SO (1-4) G2)  
G2 = alkyl<(-6)> / cycloalkyl<(-6)> / loweralkoxy / OH /  
12 / CO2H / 14 / 3 / 20



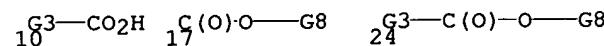
G3 = alkylene<(1-10)>  
G4 = H / Ph (SO (1-4) G2) / 5

G5—G1  
5

G5 = C(O) / 8

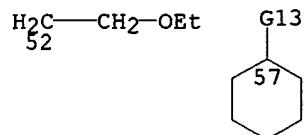
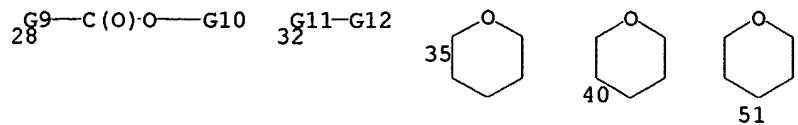


G6 = H / loweralkyl  
G7 = H / loweralkyl / CO<sub>2</sub>H / 17 / 10 / 24 /  
Ph (SO<sub>2</sub> (1-4) G2)



G8 = R<TX "dissolution-inhibiting group"> /  
(SC alkoxy carbonyl<DC (1-) M3> / 28 / Hy<EC (1-) O> /

alkyl (SR alkoxy) / 32 / Bu-t / 35 / 40 / 51 / 52 / 57 /  
CO2Bu-t)



G9 = alkylene / CH2  
G10 = alkyl<DC (1-) M3> / Bu-t  
G11 = cycloalkylene  
G12 = alkyl  
G13 = Me / Et  
MPL: claim 6

L35 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2002:172252 CAPLUS

DN 136:224212

TI Photosensitive polysilazane composition, method of forming pattern therefrom, and method of sintering coating film thereof

IN Nagahara, Tatsuro; Matsuo, Hideki

PA Clariant International Ltd., Switz.

SO PCT Int. Appl., 67 pp.

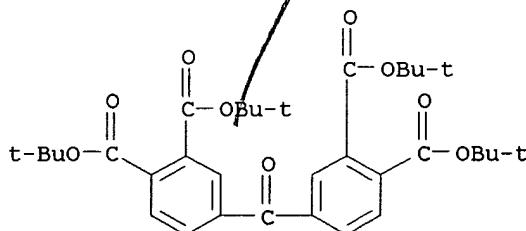
CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002019037	A1	20020307	WO 2001-JP7251	20010824
	W: CN, KR, SG, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	JP 2002072502	A2	20020312	JP 2000-262703	20000831
	JP 2002072504	A2	20020312	JP 2000-268510	20000905
	JP 2002107937	A2	20020410	JP 2000-297107	20000928
	EP 1239332	A1	20020911	EP 2001-958459	20010824
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
PRAI	JP 2000-262703	A	20000831		
	JP 2000-268510	A	20000905		
	JP 2000-297107	A	20000928		
	WO 2001-JP7251	W	20010824		
AB	A pos. photosensitive polysilazane compn. comprises: a modified silsesquifazane having basic structural units represented by the general formula -[SiR <sub>6</sub> (NR <sub>7</sub> ) <sub>1.5</sub> ]-, contg. other structural units represented by the general formula -[SiR <sub>6</sub> NR <sub>7</sub> ]- and/or [SiR <sub>6</sub> NR <sub>7</sub> ] <sub>0.5</sub> - (R <sub>6</sub> -7 = H, C <sub>1-3</sub> alkyl, or (un)substituted phenyl) in an amt. of 0.1-100 mol based on the basic structural units, and having a no.-av. mol. wt. of 100-100,000; and a photo-acid generator. It preferably contains a water-sol. compd. as a shape stabilizer. The compn. is applied to a substrate and pattern-wise exposed to light. The coating process film exposed is moistened and then developed with an aq. alkali soln. The resultant pattern is wholly exposed to light, subsequently moistened again, and then burned. Thus, a fine silica-based ceramic film which has satisfactory properties and is suitable as an interlayer dielec. is formed in a short time.				
IT	128553-67-3				
	RL: TEM (Technical or engineered material use); USES (Uses) (photo-acid generator in photosensitive polysilazane compn.)				
RN	128553-67-3 CAPLUS				
CN	1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, tetrakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)				

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L35 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2002:131262 CAPLUS

DN 136:207677

TI Positive-working photoresist compositions and substrates equipped with photoresist layers

IN Ogata, Toshiyuki; Endo, Kotaro; Komano, Hiroshi

PA Tokyo Ohka Kogyo Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002055452	A2	20020220	JP 2000-240871	20000809
US 2002025495	A1	20020228	US 2001=922723	20010807
PRAI JP 2000-240871	A	20000809		

OS MARPAT 136:207677

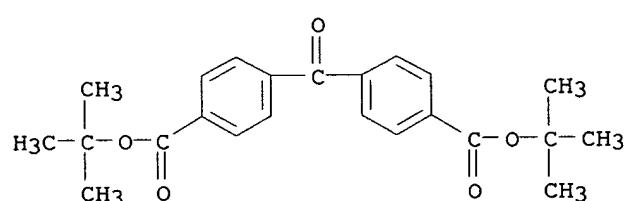
AB The compns. contain (A) alk.-sol. polysiloxanes, (B) radiation-activated **photoacid generators**, and (C) compds. with their H on phenolic OH or carboxyl groups substituted with .gtoreq.1 acid dissociative groups. Preferable compds. for component (C) is given in Markush I (Z = OH, carboxyl; R1-3 = H, OH, halogen, C1-5 alkoxy, C1-6 linear, branched, or cyclic alkyl; A = direct bond, (carboxyl-substituted) C1-5 alkylene or C2-5 alkylidene, carbonyl, Q, Q1, Q2; R4 = H, C1-5 alkyl; R5-6 = H, halogen, OH, C1-5 alkyl or alkoxy; R7-8 = C1-5 alkyl; R9-10 = H, OH, C1-5 alkyl; m = integer of 1-6) with its H on Z substituted with tertiary alkyloxycarbonylalkyl, tertiary alkyloxycarbonyl, tertiary alkyl, cyclic ether, and/or alkoxyalkyl. Substrates with a 1st **resist** layer consisting of an org. polymer and a 2nd 50-200 nm-thick **resist** layer comprising the claimed compns. are also claimed. **Resist** patterns with high resoln. and excellent profiles are formed by irradn. with excimer lasers or extreme UV beams.

IT 145531-11-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(alk.-sol. polysiloxane-based pos. **photoresist** compns. contg.  
**photoacid generators** and acid-dissociative compds.)

RN 145531-11-9 CAPLUS

CN Benzoic acid, 4,4'-carbonylbis-, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2001:847635 CAPLUS

DN 136:12819

TI Photopolymerizable compositions sensitive to UV through IR radiations and their recording materials

IN Takashima, Masanobu; Matsumoto, Hirotaka

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 58 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001324807	A2	20011122	JP 2000-142112	20000515

OS MARPAT 136:12819

AB The compns. comprise polymerizable compds. and I (L1-3 = (un)substituted methine, the substituents may form unsatd. aliph. ring or heterocycle; Z1 = group for forming 5- or 6-membered heterocycle optionally condensed with (un)substituted arom. ring or heterocycle; Y = NR1R2, OR3, SOnR4; R1-4 = H, monovalent substituted; n = 0, 1, 2; m = 0, 1, 2, 3). The compns. may also contain compds. generating radicals or cations by reaction with I. Recording materials with layers contg. a coloring component A, a coloring component B having groups which color on their reaction with A, and the above stated photopolymerizable compns. are also claimed. Clear black-and-white or color images, suitable for printing plates, resists, holograms, etc., are obtained by a dry process.

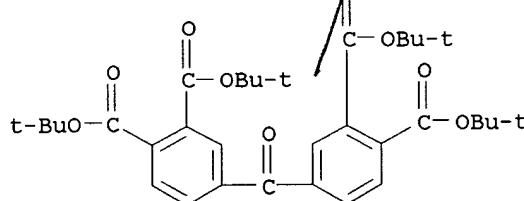
IT 128553-67-3

RL: MOA (Modifier or additive use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(polymn. initiator; formation of clear and high-contrast images by dry process using photopolymerizable compns. contg. methine dyes)

RN 128553-67-3 CAPLUS

CN 1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, tetrakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2001:753095 CAPLUS

DN 135:310926

TI Modified polysilsesquiazanes, their photosensitive compositions, and manufacture of their patterned films

IN Nagahara, Tatsuo; Matsuo, Hideki

PA Tonengeneral Sekiyu K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001288270	A2	20011016	JP 2000-108023	20000405

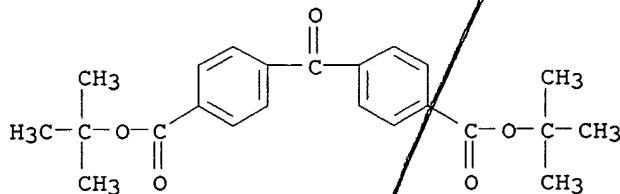
AB The polysilsesquiazanes with no.-av. mol. wt. 100-100,000 comprise (A) SiR1(NR2)1.5 units and (B) 0.1-100 mol% SiR12NR2 and/or SiR13(NR2)0.5 units [R1 = C1-3 alkyl, (un)substituted Ph; R2 = H, C1-3 alkyl, (un)substituted Ph]. The photosensitive compns. showing good storage stability contain the polysilsesquiazanes and **photoacid generators** selected from sulfoximes and triazines. The patterned films are manufd. by applying the compns., patternwise irradiating the resulting films with light, and dissolving the irradiated parts of the films. The films are useful for substitutes for Si-contg. **resists** because of high resistance to O plasma. SiO<sub>2</sub>-based ceramic films as interlayer insulating films are obtained by firing or keeping the films for a long time.

IT 145531-11-9

RL: CAT (Catalyst use); USES (Uses)  
**(photoacid generators; modified polysilsesquiazanes for photoresists with good storage stability)**

RN 145531-11-9 CAPLUS

CN Benzoic acid, 4,4'-carbonylbis-, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 2 OF 17 MARPAT COPYRIGHT 2002 ACS

AN 133:36172 MARPAT

TI High-sensitivity storage-stable photopolymerization initiators, photopolymerizable compositions, photosensitive colored compositions, color filters, and liquid crystal display devices

IN Sato, Hiroyuki; Fukumura, Takanori; Kato, Takashi; Oizumi, Fumitaka

PA Chisso Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000159827	A2	20000613	JP 1998-339915	19981130
	US 6344299	B1	20020205	US 1999-440702	19991116
	TW 469267	B	20011221	TW 1999-88120081	19991117
	KR 2000035772	A	20000626	KR 1999-53763	19991130

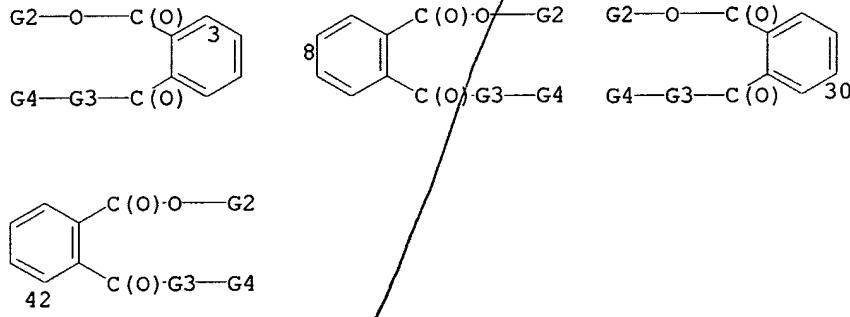
PRAI JP 1998-339915 19981130

AB The photopolymer initiators have arom. structures I (R1, R2 = C4-15 tertiary alkyl, C9-15 tertiary aralkyl; X1, X2 = O, NH; R3 = C1-30 org. group not having O directly linked to X1; R4 = C1-30 org. group not having O directly linked to X2, C4-15 tertiary alkoxy, C9-15 tertiary aralkyloxy) or II (R5, R7-R11 = C4-15 tertiary alkyl, C9-15 tertiary aralkyl; R6, R12 = C4-15 tertiary alkoxy, C9-15 tertiary aralkyloxy, C1-3 org. group not having O directly linked to X3; X3 = O, NH; R13 = C2-8 alkylene; m = 1-30; n = 0-30). Photopolymerizable compns., photosensitive colored compns., color filters, and liq. crystal display devices prep'd. with the benzophenonetetracarboxylic acid peroxide deriv. initiators are also claimed.

MSTR 1

G1—C(O)—G1

G1 = 3 / 8 / 30 / 42



G2 = alkyl<(4-15)> / alkyl<(1-)> (SR (1-) aryl<(6-)>)  
 G3 = O / NH  
 G4 = R<TX "organic group", EC (1-30) C> / alkyl<(4-15)> / alkyl<(1-)> (SR (1-) aryl<(6-)>)  
 MPL: claim 1  
 NTE: alkyl group at G2 and G4 are tertiary groups  
 NTE: substitution is restricted

L35 ANSWER 3 OF 17 MARPAT COPYRIGHT 2002 ACS

AN 131:152595 MARPAT

TI Photopolymer compositions and semiconductor devices using thereof for negative-patterned protective and interlayer insulator films

IN Hagiwara, Hideo; Komatsu, Hiroshi; Miya, Yoshihiro

PA Hitachi Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 11209610 A2 19990803 JP 1998-19413 19980130

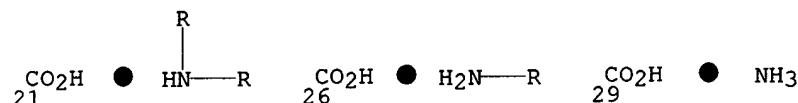
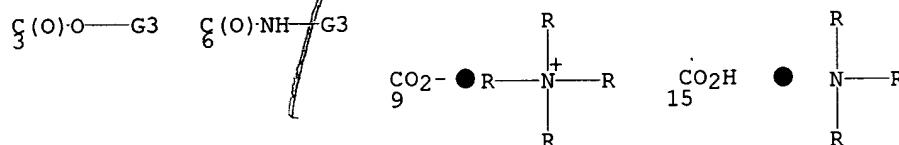
AB The title photopolymer compns. comprise (1) an arom. monomer AR<sub>1</sub>R<sub>2</sub>R<sub>3</sub>R<sub>4</sub> (A = tetravalent arom. group; R<sub>1-4</sub> = -CO<sub>2</sub>R<sub>5</sub>, -CONHR<sub>6</sub>, -COO-N+R<sub>7</sub>R<sub>8</sub>R<sub>9</sub>R<sub>10</sub>, -CO<sub>2</sub>H, wherein 1 or 2 of R<sub>1-4</sub> are groups other than -CO<sub>2</sub>H and R<sub>5-7</sub> have photochem. polymg. double bonds and R<sub>8-10</sub> are H or monovalent org. groups), (2) a polyimide precursor or a water-sol. polyimide, and (3) a photosensitizer. The compns. give the title semiconductor devices neg.-patterned protective and interlayer insulator films with excellent resoln., patterning, adhesive, mech., and thermal properties without causing reflow cracking.

MSTR 1

G1—CO<sub>2</sub>H

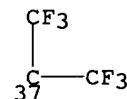
G1 = aryl (SR (3) G2) / (SC Ph (SR (3) G2) / 31 / 33)

G5—G6 31 33 G8—G7—G9

G2 = 3 / 6 / 9 / 15 / 21 / 26 / 29 / CO<sub>2</sub>H

G5 = phenylene (SR (1) G2)

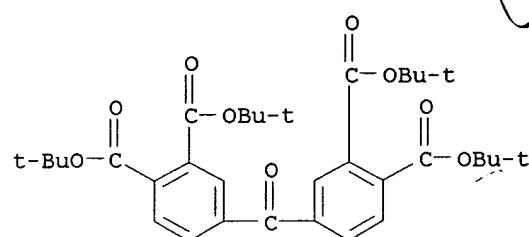
G6 = Ph (SR (2) G2)

G7 = O / SO<sub>2</sub> / 37 / C(O)

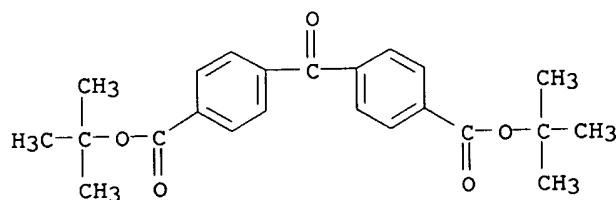
G8 = phenylene (SR (1) G2)  
G9 = Ph (SR (2) G2)  
G10 = alkylene<(1-10)>  
G11 = O / NH  
G12 = H / Me  
MPL: claim 1

L35 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2002 ACS  
 AN 1998:613798 CAPLUS  
 DN 129:296163  
 TI Silicon composition for etching mask used for manufacturing electric components  
 IN Kaji, Rikako; Hayase, Shuji; Mikoshiba, Akira; Nakano, Yoshihiko; Sato, Yasuhiko  
 PA Toshiba Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 26 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10251519	A2	19980922	JP 1997-63277	19970317
AB	The silicon compn. comprises a hydrogen silsesquixane, an acid generating compd. upon reacting with an acid, another acid generating compd. upon irradn. The compn. provides a fine SiO <sub>2</sub> pattern, which has the high Tg value and highly transparent at the deep UV region, by alk. development.				
IT	128553-67-3 RL: TEM (Technical or engineered material use); USES (Uses) (compn. for etching mask used for manufg. elec. components)				
RN	128553-67-3 CAPLUS				
CN	1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, tetrakis(1,1-dimethylethyl) ester (9CI) \ (CA INDEX NAME)				



L35 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2002 ACS  
 AN 1998:338637 CAPLUS  
 DN 129:47315  
 TI Development of the chemically amplified three-component positive electron beam resist  
 AU Horibe, Hideo; Kumada, Teruhiko; Fujino, Takeshi; Kimura, Yoshika; Kubota, Shigeru  
 CS Advanced Technol. R & D Cent., Mitsubishi Electric Corp., Amagasaki, Hyogo, 661-8661, Japan  
 SO Kobunshi Ronbunshu (1998), 55(5), 231-242  
 CODEN: KBRBA3; ISSN: 0386-2186  
 PB Kobunshi Gakkai  
 DT Journal  
 LA Japanese  
 AB The dissoln. characteristics of a chem. amplified electron beam (EB) resist composed of partially tert-butoxycarbonyl group (tBOC) protected poly(p-vinyl phenol) (PVP), a dissoln. inhibitor, and an acid generator butoxycarbonyl group (tBOC) protected poly(p-vinyl phenol) (PVP), a dissoln. inhibitor, and an acid generator were investigated. The resist sensitivity was improved with decreasing tBOC ratio of the matrix resin. As the tBOC ratio were increased, the thickness loss decreased and the resoln. of the resist was better. SEM observation of the pattern profile was carried out to investigate the sensitivity and the resoln. of the resist. The optimum tBOC ratio was 23.8%. As dissoln. inhibitors, hydroquinone protected by a tert-butoxycarbonyl group (B-HQ) and isophthalic acid protected by a tert-Bu group (B-IP) are used. Dissoln. inhibitors (B-HQ and B-IP) become dissoln. promoters (HQ and IP) after exposure. The dissoln. rate of the resist consisting of B-IP was faster than that of B-HQ in the exposed area after exposure. The dissoln. rate of the resist consisting of B-IP was faster than that of B-HQ in the exposed area. PK, of IP is smaller than that of HQ and the acidity of IP is higher than that of HQ. Therefore IP enhances the solv. of the matrix resin in the alk. developer. We evaluated the dependence of sensitivity of the resist upon acid generators. Triphenylsulfonium triflate (S-Tf), diphenyliodonium triflate (I-Tf), triphenylsulfonium antimonate (S-Sb), and diphenyliodonium antimonate (I-Sb) were used. The higher the concn. of S-Tf, the better this sensitivity of the resist. When 3% of acid generator was added to the resist, the sensitivity of the resist was S-Tf (12.5 .mu.C/cm<sup>2</sup>) < S-Sb (10.0 .mu.C/cm<sup>2</sup>) < I-Tf (7.0 .mu.C/cm<sup>2</sup>) < I-Sb (5.0 .mu.C/cm<sup>2</sup>). When iodonium ion was used as cation, the sensitivity of the resist was better. When antimonate ion as anion was used, the sensitivity of the resist was better. A 0.14 .mu.m line and space pattern is fabricated at 17.5 .mu.C/cm<sup>2</sup> using 50 keV EB in the resist (tBOC-PVP, B-IP, I-Tf).  
 IT 145531-11-9  
 RL: MOA (Modifier or additive use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)  
 (dissoln. inhibitor; development of chem. amplified three-component pos. electron beam resist)  
 RN 145531-11-9 CAPLUS  
 CN Benzoic acid, 4,4'-carbonylbis-, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1996:735155 CAPLUS

DN 126:96775

TI Studies on the decrease of dissolution rate in unexpected areas of chemically amplified three-component resist by means of dissolution inhibitors. II. Decrease of dissolution rate in unexpected areas of chemically amplified three-component resist by means of tert-butyl carboxyl ester as a dissolution inhibitor

AU Horibe, Hideo

CS Advanced Technol. R&amp;D Center, Mitsubishi Electric Corp., Amagasaki, 661, Japan

SO Kobunshi Ronbunshu (1996), 53(11), 737-744  
CODEN: KBRBA3; ISSN: 0386-2186

PB Kobunshi Gakkai

DT Journal

LA Japanese

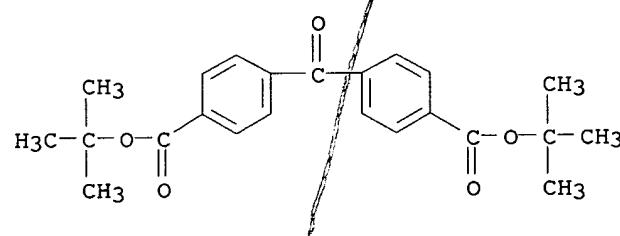
AB The dissoln. characteristics of a chem. amplified resist composed of poly(p-vinylphenol) (PVP) partially protected by tert-butoxycarbonyl group (tBOC), a dissoln. inhibitor and an acid generator, were investigated. The dissoln. rate was estd. by using a model-compn. resist which consists of tBOC-PVP as matrix resin and tert-Bu carboxylate esters as dissoln. inhibitors. The relationship between the mol. wt. of tert-Bu carboxylate and the dissoln. rate of model-compn. resist was evaluated. The higher the mol. wt. of tert-Bu carboxylate ester, the lower the dissoln. rate of model-compn. resist. IR spectra showed that the higher the mol. wt. of tert-Bu carboxylate ester, the less the decompns. rate of the tBu group of the dissoln. inhibitors at prebake. It is thought that the polymer hardness became softer by adding a dissoln. inhibitor with a low mol. wt. It was found that a dissoln. inhibitor with a high mol. wt. decreases the dissoln. rate of a resist in the unexposed area. The resist which consists of tBOC-PVP, 2,2'-dithiosalicylic acid protected by tert-Bu group and an acid generator exhibited 0.12 .mu.m L & S patterns using 80 .mu.C/cm<sup>2</sup> EB with 50 keV acceleration voltage.

IT 145531-11-9

RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(dissoln. inhibitor; decrease of dissoln. rate in unexpected areas of chem. amplified three-component photoresist by tert-Bu carboxylates esters dissoln. inhibitors)

RN 145531-11-9 CAPLUS

CN Benzoic acid, 4,4'-carbonylbis-, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1993:459533 CAPLUS

DN 119:59533

TI Synthesis and characterization of a low-stress photosensitive polyimide  
AU Nader, Allan E.; Imai, Kazunori; Craig, John D.; Lazaridis, Christina N.;  
Murray, Daniel O., III; Pottiger, Michael T.; Dombchik, Stephen A.;  
Lautenberger, William J.

CS Exp. Stn. Lab., Du Pont Electron. Chem., Wilmington, DE, 19880-0336, USA

SO Polymer Engineering and Science (1992), 32(21), 1613-17

CODEN: PYESAZ; ISSN: 0032-3888

DT Journal

LA English

AB Use of polyimides with thermal coeffs. of expansion comparable to that of  
the underlying substrate is crit. to achieving low stress in  
microelectronic packaging applications. Photosensitive polyimides are  
finding increased use because of their significant redn. in device  
processing steps. A neg. working photosensitive polyimide, based on the  
3,3',4,4'-biphenyldianhydride/p-phenylenediamine backbone, was prep'd. that  
incorporates these key features. The polyimide exhibits excellent  
photosensitivity and lithog. behavior, while retaining many thermal and  
phys. properties of the polymer framework.

IT 146219-91-2P

RL: PREP (Preparation)

(synthesis and characterization of low-stress photosensitive polyimide)

RN 146219-91-2 CAPLUS

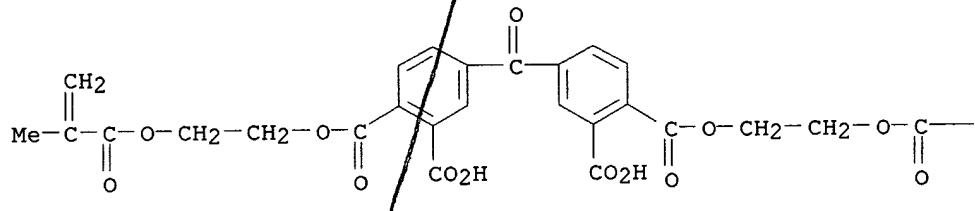
CN 1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, 1,1'-bis[2-[(2-methyl-1-  
oxo-2-propenyl)oxy]ethyl] ester, polymer with 1,4-benzenediamine and  
4,4'-oxybis[benzenamine] (9CI) (CA INDEX NAME)

CM 1

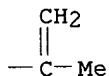
CRN 97401-11-1

CMF C29 H26 O13

PAGE 1-A



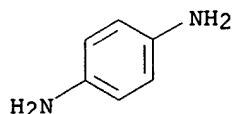
PAGE 1-B



CM 2

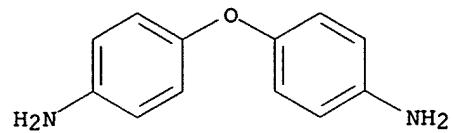
CRN 106-50-3

CMF C6 H8 N2



CM 3

CRN 101-80-4  
CMF C12 H12 N2 O



L35 ANSWER 5 OF 17 MARPAT COPYRIGHT 2002 ACS  
 AN 118:136249 MARPAT  
 TI Resist materials for pattern formation using partially protected alkali-soluble polymer  
 IN Kubota, Shigeru; Kumada, Teruhiko; Tanaka, Sachiko; Horibe, Hideo; Hizuka, Yuji  
 PA Mitsubishi Electric Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04158363	A2	19920601	JP 1990-285465	19901022

AB The resist materials consist of (1) an alkali-sol. polymer of which 5-50% of its functional groups providing alkali-sol. are protected by a protective group which is decompd. by acids or bases and (2) a compd. which generates an acid or base by irradn. and optionally (3) a compd. which becomes alkali-sol. on decompn. by acid or base. The materials show high sensitivity toward radiation and provide high resoln. fine patterns. A soln. contg. poly(p-vinylphenol) protected with di-tert-butyldicarbonate and Ph<sub>2</sub>I.BF<sub>4</sub> was coated on a Si wafer to give a resist, which gave a submicron pattern by using a deep UV ray.

## MSTR 1A

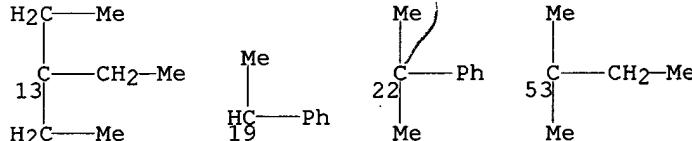
G1—G2—O—G3

G1 = alkyl (SO (1-3) 2) / aryl (SO (1-3) 59) /  
 (EX Ph (SO (1-2) 62) / 42 / 47)

G2—O—G3 42 G5—C(O)—O—G3 47 G6—G7—G8—G2—O—G3 59 G2—O—G3

G2—O—G3  
62

G2 = C(O) / SO<sub>2</sub>  
 G3 = Bu-t / 53 / 13 / Ph / 19 / 22



G5 = cyclohexylene  
 G6 = phenylene  
 G7 = C(O) / O  
 G8 = phenylene  
 MPL: disclosure

L35 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1993:136237 CAPLUS

DN 118:136237

TI Composition for positive-working photoresist

IN Kumada, Teruhiko; Tanaka, Sachiko; Horibe, Hideo; Kubota, Shigeru; Hizuka, Yuji

PA Mitsubishi Electric Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 04037760 A2 19920207 JP 1990-145117 19900601

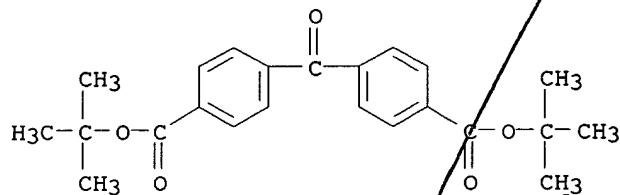
AB The title compn. contains alkali-sol. polymers, a compd(s). that will release acids when exposed to radiation, and gtoreq.1 compds. selected from Ar(XCR1R3R2)<sub>m</sub> and Y(Ar(XCR1R3R2)<sub>m</sub>)<sub>2</sub> [Ar = benzene ring or heterocycle; Y = single bond, O, SO<sub>2</sub>, CH<sub>2</sub>, ZO, CMe<sub>2</sub>, C(CF<sub>3</sub>)<sub>2</sub>; X = CO<sub>2</sub>, OCO<sub>2</sub>, SO<sub>3</sub>; R1-3 = H, alkyl, alkoxy, alkenyl, alkynyl, Ph; m = 1-4]. This compn. shows high photosensitivity and resolving power (up to 1/4 .mu.m level).

IT 145531-11-9

RL: TEM (Technical or engineered material use); USES (Uses)  
(photoresist compn. contg.)

RN 145531-11-9 CAPLUS

CN Benzoic acid, 4,4'-carbonylbis-, bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L35 ANSWER 6 OF 17 MARPAT COPYRIGHT 2002 ACS

AN 113:106442 MARPAT

TI Unsaturated .beta.-keto ester acetals and their use in photoimaging compositions

IN Schulthess, Adrian; Hunziker, Max

PA Ciba-Geigy A.-G., Switz.

SO Eur. Pat. Appl., 34 pp.

CODEN: EPXXDW

DT Patent

LA German

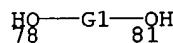
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 347381	A1	19891220	EP 1989-810430	19890607
	EP 347381	B1	19920212		
	R: BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
	US 5059698	A	19911022	US 1989-363801	19890609
	CA 1337771	A1	19951219	CA 1989-602272	19890609
	JP 02051509	A2	19900221	JP 1989-150333	19890613

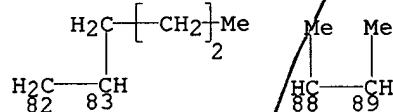
PRAI CH 1988-2257 19880613

AB The title compds. (I) or  $YXCOCHR8CR10R12OR13$  [ $n = 0-2$ ;  $R1 = H$ , alkyl, Ph, benzyl, etc.;  $R2-R8 = H$ , halogen, alkyl, Ph, naphthyl,  $CO2R9$ ,  $-p-C6H4CO2R9$ ,  $SO2R9$  ( $R9 =$  alkyl, Ph);  $X = O$ ,  $S$ ,  $NR10$  ( $R10 = H$ ,  $R9$ );  $Y = CR11:CH2$ ,  $-p-C6H4-CR11:CH2$ ,  $ZOCR11:CH2$ , II,  $ZOCOCR11:CH2$ ,  $ZNR11COCR11:CH2$ ,  $ZO2CCH:CHCO2R11$ ,  $ZNR11CH2COCH:CHCO2R11$  ( $R11 = R10$ ;  $Z =$  ~~gtoreq.2~~ methylene group-contg. residue;  $R12$ ,  $R13 = R9$ , naphthyl)] are prep'd. for use in photoimaging compns. for photoresists, integrated circuit manufg., printing plates, ans the like.

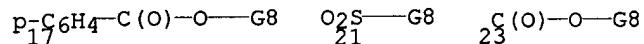
MSTR 4



G1 = alkylene<(2-4)> (SO (1-) G2) / (EX CH2CH2 / CH2CH2CH2 / 82-78 83-81 / 88-78 89-81 )



G2 = X / alkyl<(1-10)> (SO (1-) X) / Cb<EC (6-10) C, AR (1-), BD (ALL) N, RC (1-2), RS (1-) E6 (0) OTHER> (SO (1-) G7) / 17 / 21 / 23



G7 = X / CN / NO2 / alkyl&lt;(1-4)&gt;

G8 = alkyl&lt;(1-6)&gt; (SO (1-) G10) / Ph

G10 = X / NO2

MPL: claim 5

L35 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1990:488254 CAPLUS

DN 113:88254

TI Photopolymerizable composition for printing plates

IN Okamoto, Yasuo; Koike, Mitsuru; Kita, Nobuyuki

PA Fuji Photo Film Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01298348	A2	19891201	JP 1988-129647	19880527
	JP 2547613	B2	19961023		

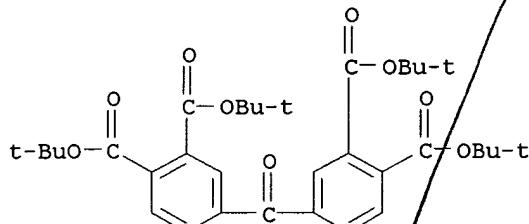
AB In the title photopolymerizable compn. contg. an ethylenic monomer, photopolymn. initiators, and optionally a linear polymer, the polymn. initiator is a combination of (1) anion salt of cationic org. dye or combinations thereof, (2) selected from a compd. contg. a C-halogen bond, an arom. oxonium salt or arom. halonium, and an org. peroxide, and (3) I [Ar = II or III; R<sub>1</sub>, R<sub>3</sub> = H, alkyl; R<sub>3-7</sub> = H, halo, alkyl, alkenyl, aryl, OH, alkoxy, SR<sub>9</sub>, SOR<sub>9</sub>, SO<sub>2</sub>R<sub>9</sub>; R<sub>9</sub> = alkyl, alkenyl; R<sub>8</sub> = H, alkyl, acyl; Y<sub>1</sub> = H, IV]. The photosensitive compn. is sensitive toward an Ar laser beam.

IT 128553-67-3

RL: USES (Uses)  
(photopolymn. initiator, photoresistant contg.)

RN 128553-67-3 CAPLUS

CN 1,2-Benzenedicarboxylic acid, 4,4'-carbonylbis-, tetrakis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



FILE 'CAPLUS' ENTERED AT 15:18:46 ON 07 NOV 2002  
S 117458-06-7/REG#

FILE 'REGISTRY' ENTERED AT 15:18:47 ON 07 NOV 2002  
L6 1 S 117458-06-7/RN

FILE 'CAPLUS' ENTERED AT 15:18:47 ON 07 NOV 2002  
L7 111 S L6  
L8 4663 S PAG OR PHOTOACID##### OR PHOTO ACID#####  
L9 10091 S GENERAT#####(2A)ACID###  
L10 77 S L7 AND L8-9  
L11 67 S L7(L) (PAG OR PHOTOACID##### OR PHOTO OR RESIST)  
L12 59 S L7(L) (RESIST)  
L13 11 S L7(L) (PAG OR PHOTOACID##### OR (PHOTO ACID))  
L14 3 S L12 AND L13  
L15 98 S L7 AND RESIST  
L16 65 S L11 AND L15  
L17 4900 S POSITIVE(2A)RESIST  
L18 54 S L7 AND L17  
L19 26 S L7 AND (PAG OR PHOTOACID##### GENERATOR OR (PHOTO ACID GENERA  
L20 4501 S POSITIVE(2A)PHOTORESIST  
L21 28 S L7 AND L20

=> s 119 and (l17 or l21)  
L22 14 L19 AND (L17 OR L21)

=> s l7(l)photoresist  
29725 PHOTORESIST  
18198 PHOTORESISTS  
33978 PHOTORESIST  
(PHOTORESIST OR PHOTORESISTS)  
L23 39 L7(L) PHOTORESIST

=> s (l12 or l23) and l13  
L24 11 (L12 OR L23) AND L13

=> s l22 or l24  
L25 17 L22 OR L24

L25 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2002:777870 CAPLUS

TI Optically active compound and photosensitive resin composition.

IN Hanabata, Makoto; Sato, Masahiro; Katayama, Junko; Kitajima, Satsuki; Niwa, Atsushi

PA Kansai Research Institute, Inc., Japan

SO PCT Int. Appl., 166 pp.

CODEN: PIXXD2

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002079131	A1	20021010	WO 2002-JP3140	20020329

W: CA, KR, US  
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,  
 PT, SE, TR

PRAI JP 2001-97019 A 20010329  
 JP 2001-97020 A 20010329

AB The disclosed optically active compds. are represented by the following formula (1) and is used in combination with a photosensitizer:  

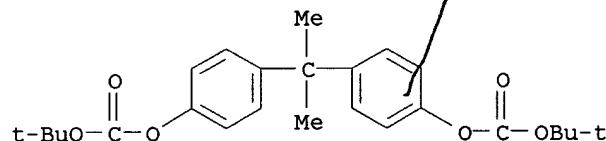
$$A-[(J)m-(X-Pro)]n \quad (1)$$
 wherein A represents a hydrophobic unit comprising at least one hydrophobic group selected among hydrocarbon groups and heterocyclic groups; J represents a connecting group; X-Pro represents a hydrophilic group protected by a protective group Pro eliminable with light irradn.; m is 0 or 1; and n is an integer of 1 or larger. The protective group Pro may be eliminable upon light irradn. by the action of the photosensitizer (esp. an acid generator), or may be a hydrophobic protective group. The hydrophilic group may be hydroxyl, carboxyl, etc. The optically active compd. is highly sensitive even to short-wavelength lights and is useful in the field of resists for forming a pattern with high resoln.

IT 117458-06-7P

RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (synthesis and use as photosensitive compd. for photoacid generator type photoresist compns.)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2002:638186 CAPLUS

DN 137:192762

TI Amine compounds, resist compositions and patterning process

IN Hatakeyama, Jun; Kobayashi, Tomohiro; Watanabe, Takeru

PA Shin-Etsu Chemical Co., Ltd., Japan

SO U.S. Pat. Appl. Publ., 40 pp.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2002115018	A1	20020822	US 2001-3288	20011206
JP 2002249478	A2	20020906	JP 2001-369719	20011204

PRAI JP 2000-373316 A 20001207

OS MARPAT 137:192762

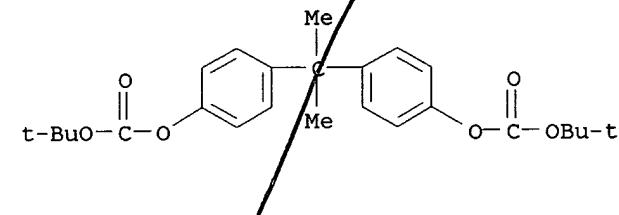
AB Amine compds. having a cyano group are useful in resist compns. for preventing a resist film from thinning and also for enhancing the resoln. and focus margin of resist. The invention amine compds. have general formulas:  $(R2)_b-N-(R1-CN)_a$ ; I;  $(R2)_b-N-(R1C(=O)OR4-CN)_a$ ; II ( $R1,4 = C1-4$  alkylene;  $R2 = C1-20$  cycloc alkyl which may contain a hydroxy group, ether, carbonyl, ester, lactone ring, carbonate, cyano group;  $R3 = C2-20$  alkylene which may contain hydroxy, ether, thioether, carbonyl, ester, thioester group, carbonate;  $a = 1-3$ ;  $a+b = 3$ ).

IT 117458-06-7

RL: TEM (Technical or engineered material use); USES (Uses)  
(photoacid generator; amine compds. and photoresist  
compns. for patterning process)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2002:131262 CAPLUS

DN 136:207677

TI Positive-working photoresist compositions and

substrates equipped with photoresist layers

IN Ogata, Toshiyuki; Endo, Kotaro; Komano, Hiroshi

PA Tokyo Ohka Kogyo Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 14 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PAT FAMILY EQUIVALENT

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002055452	A2	20020220	JP 2000-240871	20000809
	US 2002025495	A1	20020228	US 2001-922723	20010807
PRAI	JP 2000-240871	A	20000809		
OS	MARPAT 136:207677				

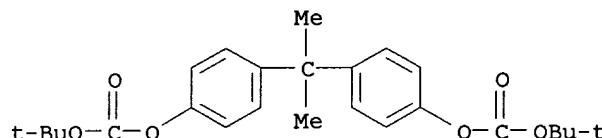
AB The compns. contain (A) alk.-sol. polysiloxanes, (B) radiation-activated photoacid generators, and (C) compds. with their H on phenolic OH or carboxyl groups substituted with .gt;req.1 acid dissociative groups. Preferable compds. for component (C) is given in Markush I (Z = OH, carboxyl; R1-3 = H, OH, halogen, C1-5 alkoxy, C1-6 linear, branched, or cyclic alkyl; A = direct bond, (carboxyl-substituted) C1-5 alkylene or C2-5 alkylidene, carbonyl, O, Q1, Q2; R4 = H, C1-5 alkyl; R5-6 = H, halogen, OH, C1-5 alkyl or alkoxy; R7-8 = C1-5 alkyl; R9-10 = H, OH, C1-5 alkyl; m = integer of 1-6) with its H on Z substituted with tertiary alkyloxycarbonylalkyl, tertiary alkyloxycarbonyl, tertiary alkyl, cyclic ether, and/or alkoxyalkyl. Substrates with a 1st resist layer consisting of an org. polymer and a 2nd 50-200 nm-thick resist layer comprising the claimed compns. are also claimed. Resist patterns with high resoln. and excellent profiles are formed by irradn. with excimer lasers or extreme UV beams.

IT 117458-06-7

RL: TEM (Technical or engineered material use); USES (Uses)  
 (alk.-sol. polysiloxane-based pos. photoresist  
 compns. contg. photoacid generators and  
 acid-dissociative compds.)

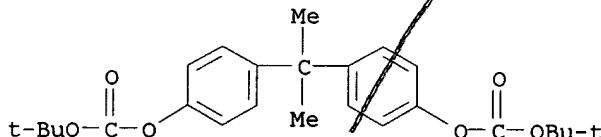
RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2002 ACS  
 AN 1999:246939 CAPLUS  
 DN 130:274098  
 TI Photoresist composition  
 IN Watanabe, Satoshi; Watanabe, Osamu; Furihata, Tomoyoshi; Takeda, Yoshifumi; Nagura, Shigehiro; Ishihara, Toshinobu; Yamaoka, Tsuguo  
 PA Shin-Etsu Chemical Co., Ltd., Japan  
 SO Eur. Pat. Appl., 82 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 908783	A1	19990414	EP 1998-308175	19981008
	EP 908783	B1	20020731	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO JP 11190904 A2 19990713 JP 1998-299177 19981006 US 6136502 A 20001024 US 1998-167567 19981007	
PRAI	JP 1997-291681	A	19971008		
AB	A photoresist compn. comprises (A) an org. solvent, (B) at least <u>two</u> polymers with wt.-av. mol. wts. of 1000-500,000, which have at least one type of acid labile groups (and) are crosslinked within a mol. and/or between mols. with crosslinking groups having C-O-C linkages, and (C) a photoacid generator. The photoresist compn. has excellent sensitivity and resoln. and provides resist patterns of outstanding thermal stability, reproducibility, and plasma etching resistance. Patterns obtained with the photoresist compn. are less prone to overhanging and have excellent dimensional controllability. The photoresist compn. is suitable as a micropatterning material for VLSI fabrication.				
IT	117458-06-7			RL: TEM (Technical or engineered material use); USES (Uses) (photoresist compns. contg. crosslinked polymers having acid labile groups, photoacid generators and)	
RN	117458-06-7	CAPLUS			
CN	Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)				



L25 ANSWER 7 OF 17 CAPIUS COPYRIGHT 2002 ACS  
 AN 1998:414837 CAPIUS  
 DN 129:101934  
 TI Radiation-sensitive resin composition  
 IN Suwa, Mitsuhiro; Iwasawa, Haruo; Kajita, Toru; Iwanaga, Shin-ichiro  
 PA Japan Synthetic Rubber Co., Ltd., Japan  
 SO Eur. Pat. Appl., 35 pp.  
 CODEN: EPXXDW

DT Patent  
 LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 849634	A1	19980624	EP 1997-121963	19971212
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	US 6187504	B1	20010213	US 1997-976662	19971124
	JP 10232490	A2	19980902	JP 1997-347330	19971203
	US 2001014427	A1	20010816	US 2000-739833	20001220
	US 6322949	B2	20011127		

PRAI JP 1996-353866 A 19961219  
 US 1997-976662 A3 19971124

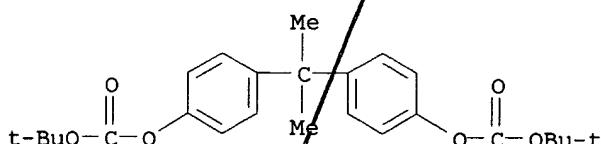
AB A pos.-tone or neg.-tone radiation-sensitive resin compn. comprises (A) a **photoacid generator** represented by the formula I or II wherein R<sub>1</sub>, R<sub>2</sub>, R<sub>5</sub>, and R<sub>6</sub> are an alkyl group; R<sub>3</sub> and R<sub>7</sub> are a hydroxyl group or -OR<sub>4</sub> (wherein R<sub>4</sub> is an org. group); A<sub>1</sub>- and A<sub>2</sub>- indicate a monovalent anion; a and c denote an integer of 4-7; and b and d denote an integer of 0-7. The pos.-tone radiation-sensitive resin compn. further comprises (B1) an acid-cleavable group-contg. resin or (B2) an alkali-sol. resin and an alkali solv. control agent and the neg.-tone radiation-sensitive resin compn. further comprises (C) an alkali-sol. resin and (D) a crosslinking agent. The resin compn. is highly sensitive and exhibits superior resoln. and pattern forming performance.

IT 117458-06-7

RL: TEM (Technical or engineered material use); USES (Uses)  
 (photoresist compns. contg. arom. photoacid  
 generators and)

RN 117458-06-7 CAPIUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1999:56807 CAPLUS

DN 130:146230

TI Chemically amplified positive-working photoresist with  
good resolution in dry condition

IN Hatakeyama, Jun; Takemura, Katsuya; Nagura, Shigehiro

PA Shin-Etsu Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 17 pp.

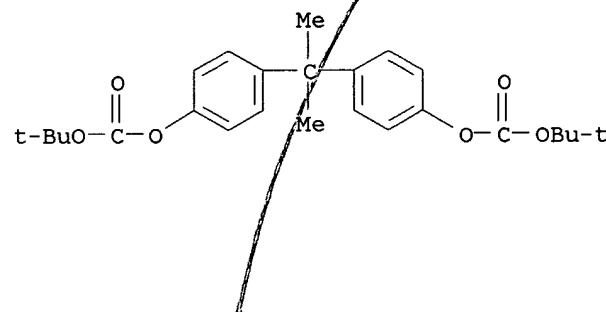
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11015163	A2	19990122	JP 1997-185812	19970626
AB The photoresist contains al alc. compd. with b.p. (at 760 mmHg)					
.gtoreq.180.degree.. The other constituents for above may be an org. solvent, a base resin (Mw 5000-100,000) where .gtoreq.10 mol% H of phenolic OH are replaced with an acid-unstable group CR1R2OR3 (I; R1, R2 = H, C1-10 alkyl; R3 = C1-10 hydrocarbyl), and an acid generator. The base resin may be crosslinked via CR4R5(OR6)bOA[O(R60)bCR4R5]a' and/or CR4R5OR6BA[BR6OCR4R5]a' [R4; R5 = H, C1-8 alkyl; R6 = C1-10 alkylene; b = 0-10; A = a-valet C1-50 satd. aliph., arom., alicyclic, or heterocyclic group; B = CO <sub>2</sub> , NHC <sub>2</sub> O, NHCONH; a = 2-8; a' = 1-7]. A macromol. of Mw 3000-300,000 comprising II [R11 = H, Me; R12 = C1-8 alkyl; R13 = an acid-unstable group other than I; d .gtoreq.0; e > 0; d + e = 1; 0.5 .ltoreq. e/(d + e) .ltoreq. -1.0], or a dissoln. inhibitor having an acid-unstable group, may be incorporated in above photoresist.					
IT	117458-06-7				
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)					
(dissoln. inhibitor; chem. amplified pos. photoresist contg. high-b.p. alcs. and showing good patterning ability in dry condition)					
RN	117458-06-7	CAPLUS			
CN	Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)				



L35 ANSWER 4 OF 17 MARPAT COPYRIGHT 2002 ACS

AN 130:168032 MARPAT

TI Preparation of alicyclic carboxylic acid tert-butyl esters from the corresponding aromatic esters

IN Hiramine, Tadashi; Masuda, Toru

PA Honshu Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

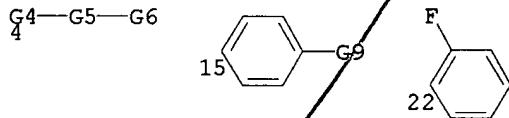
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11029528	A2	19990202	JP 1997-181306	19970707
OS	CASREACT 130:168032				

AB  $XmZ1[CO2CMe3]n$  [ $X = OH, CO2, C1-8$  (halo)alkyl, C5-6 cycloalkyl, C1-18 alkoxy, C5-12 cycloalkoxy;  $Z1 =$  residue of bicyclohexyl, decahydronaphthalene,  $Z220$  ( $Z2 =$  cyclohexyl),  $Z22CO$ ,  $Z22CR1R2$ , cyclohexane;  $R1, R2 = H, halo, C1-6$  (halo)alkyl;  $m = 0-4$ ;  $n = 1-4$ ], useful as dissoln. inhibitors for chem.-amplified photoresists (no data), are prep'd. by hydrogenation of  $XmZ1[CO2CMe3]n$  ( $X, m, n =$  same as above;  $Z1 =$  residue of biphenyl, naphthalene, Ph2O, Ph2CO, Ph2CR1R2;  $R1, R2 =$  same as above) in the presence of metal hydrides, noble metals (supported on carriers), or noble metal complexes as catalysts. Di-tert-Bu 2,6-naphthalenedicarboxylate was hydrogenated over Rh/C at 100.degree. and 20 kg/cm<sup>2</sup> for 4.5 h to give di-tert-Bu 2,6-decahydronaphthalenedicarboxylate.

## MSTR 1

G1—C(O)-OBu-t

G1 = biphenyl (SO G2) / naphthyl (SO G2) / 4 /  
 Ph (SO G2) / (SC tolyl / 15 / 22)



G2 = (-3) CO2Bu-t / (-4) G3  
 G3 = OH / CO2H / alkyl<(1-8)> (SO (1-) X) / cyclopentyl / cyclohexyl / alkoxy<(1-18)> / cycloalkyloxy<(5-12)>  
 G4 = phenylene (SO (1-) G7)  
 G5 = O / C(O) / 7

G8  
 C  
 7  
 G8

G6 = Ph (SO (1-) G7)  
 G7 = CO2Bu-t / OH / CO2H / alkyl<(1-8)> (SO (1-) X) / cyclopentyl / cyclohexyl / alkoxy<(1-18)> / cycloalkyloxy<(5-12)>  
 G8 = H / X / alkyl<(1-6)> (SO (1-) X) / (SC CF3)  
 G9 = Bu-t / OMe  
 MPL: claim 1  
 NTE: substitution is restricted

L25 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 2000:166145 CAPLUS

DN 132:214779

TI Chemically amplified resist material

IN Itani, Toshiro

PA NEC Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

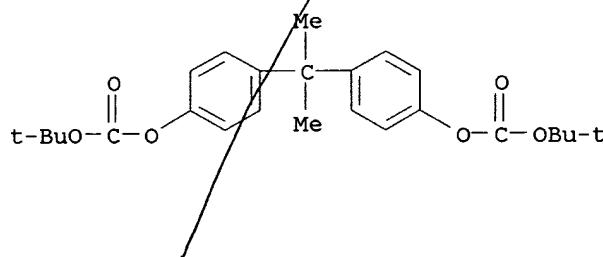
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000075489	A2	20000314	JP 1998-241247	19980827
AB The title resist material contains an alicyclic acrylic resin having protective groups of which the polarity is changed by acid, a photoacid generator, and either a bisphenol deriv. having protective groups of which the polarity changes or a hydrogenated polyhydroxystyrene deriv. The material provides high resoln. resist patterns with good dry etch resistance and thermal resistance.					
IT 117458-06-7 RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses) (chem. amplification resist compn. contg. acrylic resin, photoacid generator, and bisphenol deriv. or hydrogenated polyhydroxystyrene deriv.)					
RN 117458-06-7 CAPLUS					
CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)					



L25 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1998:277228 CAPLUS

DN 129:10629

TI Photoresist composition containing 4-phenylpyridine as additive

IN Niki, Hirokazu; Wakabayashi, Hiromitsu; Hayase, Rumiko; Oyasato, Naohiko; Onishi, Yasunobu; Sato, Kazuo; Chiba, Kenji; Hayashi, Takao

PA Kabushiki Kaisha Toshiba, Japan

SO U.S., 21 pp., Cont.-in-part of U.S. Ser. No. 781,512, abandoned.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5744281	A	19980428	US 1997-848747	19970501
	JP 07134419	A2	19950523	JP 1994-125006	19940607
	JP 3297199	B2	20020702		
	US 5658706	A	19970819	US 1994-302319	19940908
PRAI	JP 1993-228969	A	19930914		
	JP 1994-125006	A	19940607		
	US 1994-302319	A1	19940908		
	US 1997-781512	B2	19970109		

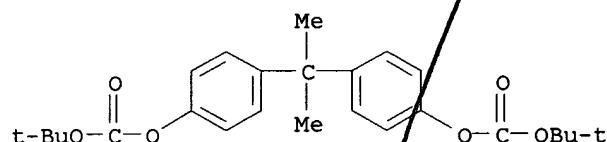
AB A photoresist compn. for forming a pattern, which comprises (a) a polymer represented by the formula  $\text{I}$  wherein R<sub>1</sub> is a hydrogen atom or a Me group, R<sub>2</sub> is a monovalent org. group, m is 0 or a pos. integer, n is a pos. integer, and m and n satisfying the inequality  $0.03 \leq n/(m+n) \leq 1$ , (b) a compd. capable of generating an acid when irradiated with light, and (c) 4-phenylpyridine, wherein the wt.-av. mol. wt. (M<sub>w</sub>) and the no.-av. mol. wt. (M<sub>n</sub>) of  $\text{I}$  satisfy the inequalities  $4000 \leq M_w \leq 50,000$  and  $110 \leq M_w/M_n \leq 2.50$  (M<sub>w</sub> and M<sub>n</sub> resp. represent value converted in styrene).

IT 117458-06-7

RL: TEM (Technical or engineered material use); USES (Uses)  
(pos. chem. amplified photoresists contg.  
hydroxystyrene copolymers, photoacid generators,  
nitrogen-contg. compds. and)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1997:479313 CAPLUS

DN 127:115290

TI Chemically amplification-type **positive**-working **resist** composition

IN Watanabe, Osamu; Natakeyama, Jun; Nakura, Shigehiro; Ishihara, Toshinobu

PA Shin-Etsu Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 30 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09160246	A2	19970620	JP 1995-337899	19951201
JP 3052815	B2	20000619		

OS MARPAT 127:115290

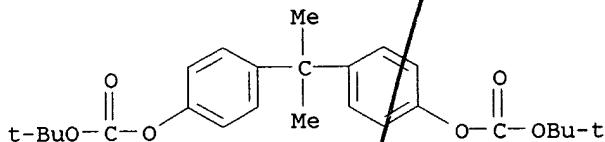
AB The title compn. comprises (A) an org. solvent, (B) a polymer with structural repeating units I [R1 = H, Me; R4, R5 = H, C1-6 alkyl; R6 = C1-10 alkyl; m = 1-3; n, p, q = d.p. satisfying following relations: 0.02.ltoreq. p/(p+q+r) .ltoreq.0.5, 0.01.ltoreq. q/(p+q+r) .ltoreq.0.3, 0< (p+q)/(p+q+r) .ltoreq.0.8] with a wt. av. mol. wt. of 3,000-300,000, (C) an acid generator, and (D) a solv.-controlling agent (11 Markush structures are given) with a wt. av. mol. wt. of 100-1,000 and contg. substituted phenolic groups. The compn. suitable for manufg. LSIs shows high sensitivity towards high energy rays.

IT 117458-06-7

RL: TEM (Technical or engineered material use); USES (Uses) (solv.-controlling agent: chem. amplification-type **pos** -working **resist** compn.)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethyldene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1997:320991 CAPLUS

DN 126:299691

TI Chemically-amplified positive-working resist material  
containing organic solvents having group unstable to acid

IN Watanabe, Satoshi; Oikawa, Katsuyuki; Takeda, Yoshifumi; Nagura, Shigehiro

PA Shinetsu Chem Ind Co, Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 09068803	A2	19970311	JP 1995-246873	19950831
		JP 3060913	B2	20000710

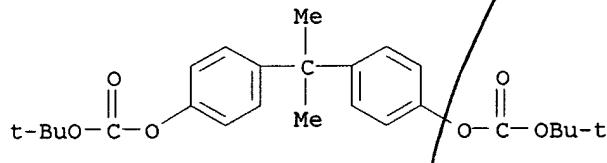
AB The resist material contains an alkali-sol. resin, a **photoacid generator**, and an org. solvent contg. an org. solvent with b.p. 90-200.degree. having  $\geq$  one group which is unstable to acid. The solvent is preferably selected from  $\text{AcOCMe}_3$ ,  $\text{EtCO}_2\text{CMe}_3$ , and  $\text{PrCO}_2\text{CMe}_3$ . The material may contain a dissoln. inhibitor having a group which is unstable to acid and a fluorosurfactant. The material is sensitive to high-energy beam, esp. to KrF excimer laser, shows good resoln., storage stability, film-forming property, and provides a resist profile with rectangular shape.

IT 117458-06-7

RL: TEM (Technical or engineered material use); USES (Uses)  
(dissoln. inhibitor; chem.-amplified pos.-working  
resist material contg. org. solvents having group unstable to  
acid to improve resoln.)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1996:95386 CAPLUS

DN 124:246458

TI Resist materials using glyoxime derivative as photoacid-generating agents

IN Watanabe, Atsushi; Yagihashi, Fujio; Ookaya, Sukeko

PA Shinetsu Chem Ind Co, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 07295222	A2	19951110	JP 1994-110324	19940426
		JP 2906999	B2	19990621

OS MARPAT 124:246458

AB The title material contains, as a photoacid-generating agent, a glyoxime deriv. R3O2SON:CR1CR2:NOSO2R3 (R1, R2 = alkyl, cycloalkyl, aryl, heteroaryl; R1 and R2 may form a cyclic structure; R3 = alkyl, cycloalkyl, aryl, heteroaryl). The resist may comprise (1) the glyoxime deriv., and (2) aq. alkali-insol. polymer which becomes alk. sol. by acid. The materials show high sensitivity toward radiations such as high energy UV rays, electron beams, X-ray, and the like and good thermal stability and resistance to alk. impurities. Thus, a pos.-working resist comprised bis-O-(p-toluenesulfonyl)-.alpha.-diphenylglyoxime, tetrahydropyranyl-protected poly(p-hydroxystyrene), and di-tert-butoxycarbonylbisphenol A.

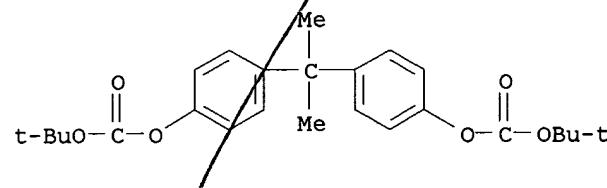
IT 117458-06-7, Di-tert-butoxycarbonyl Bisphenol A

RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)

(resist contg. glyoxime deriv. as photo-acid generator)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1995:1002085 CAPLUS

DN 124:71378

TI Water-soluble onium salts: New class of acid generators for chemical amplification **positive resists**

AU Sakamizu, Toshio; Shiraishi, Hiroshi; Ueno, Takumi

CS Central Res. Lab., Hitachi Ltd., Tokyo, 185, Japan

SO ACS Symposium Series (1995), 614(Microelectronics Technology), 124-36  
CODEN: ACSMC8; ISSN: 0097-6156

PB American Chemical Society

DT Journal

LA English

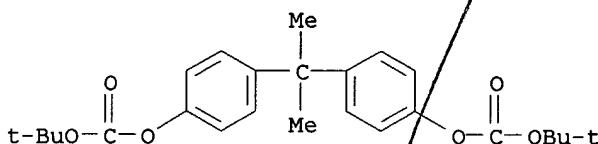
AB Alkyl-substituted-sulfonium salts were synthesized and investigated with a view to applying them as the acid generator in chem. amplification **pos. resists**. It was found that the solv. in water of alkyl-substituted onium salts is high, while that of triaryl-substituted onium salt is quite low. This dissoln. promotion ability of alkyl-substituted onium salts increase with the decreasing mol. size of the alkyl group. The quantum yield for acid generation from dialkylarylsulfonium salt was one order of magnitude larger than those of trialkyl-substituted onium salts. A difference was obsd. in acid-generation efficiency between electron-beam exposure and deep-UV exposure. We will discuss with this difference in terms of acid generation mechanism. Water-sol. onium salts were detd. to be effective acid generators for electron-beam exposure: they can produce high resoln. patterns (100-nm contact holes).

IT 117458-06-7, 2,2-Bis[p-(tert-butoxycarbonyloxy)phenyl]propane

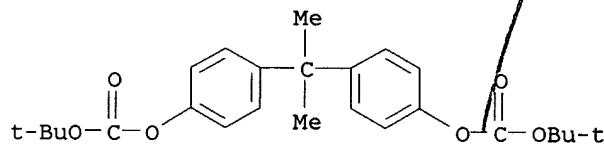
RL: TEM (Technical or engineered material use); USES (Uses)  
(dissoln. inhibitor; water-sol. onium salts as acid generators for chem. amplification **pos. resists**)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2002 ACS  
 AN 1995:67725 CAPLUS  
 DN 122:92625  
 TI Structural design of acid-decomposable dissolution inhibitors for a 3-components positive CA resist  
 AU Aoai, Toshiaki; Yamanaka, Tsukasa; Kokubo, Tadayoshi  
 CS Reseach Lab., Fuji Photo Film Co. Ltd., Shizuoka, 421-03, Japan  
 SO Proceedings of SPIE-The International Society for Optical Engineering (1994), 2195(Advances in Resist Technology and Processing XI), 111-25  
 CODEN: PSISDG; ISSN: 0277-786X  
 DT Journal  
 LA English  
 AB A design of 3-components pos. chem. amplification (CA) resist system (consists of acid-decomposable low mol. dissoln. inhibitor / photo-acid generator (PAG) / phenolic resin binder) was investigated. A series of model inhibitors were newly synthesized and examd. for the structural influence to their inhibition efficiency on novolak (NVK) dissoln. The hydrophobicity and the mol. size of the inhibitor as well as the dispersivity of the acid decomposable groups in the mol. were found influential. By maximizing those parameters, the inhibitor with improved inhibition by three orders of magnitude compared to the previously known ones was obtainable. This even enabled the use of poly(p-hydroxystyrene) (PHS) as a binder, generally known to suffer from poor inhibition, in place of NVK. A mol. conformational anal. as well as IR spectrum anal. were carried out on the key materials for discussion of the inhibition mechanism. A mol. interaction model between the inhibitor and the hydrophilic site of binder, a similar model to DNQ-PAC / NVK system, was proposed for the mechanism. The 3-components resist samples formulated with simple phenolic binders and the improved inhibitor performed well on imaging under KrF excimer laser exposure. A 0.24 .mu.m L/S image with vertical profile was obtainable.  
 IT 117458-06-7P  
 RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (design and synthesis of acid-decomposable dissoln. inhibitors for 3-component pos. chem.-amplified resist)  
 RN 117458-06-7 CAPLUS  
 CN Carbonic acid, (1-methylethyldene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2002 ACS

AN 1994:446390 CAPLUS

DN 121:46390

TI Acid generation and deprotecting reaction by diphenyliodonium  
9,10-dimethoxyanthracene-2-sulfonate in a novolak **positive**  
**photoresist** based on chemical amplification

AU Naitoh, Kazuhiko; Yamaoka, Tsuguo; Umehara, Akira

CS Fac. Eng., Chiba Univ., Chiba, 263, Japan

SO Polymers for Advanced Technologies (1992), 3(3), 117-23

CODEN: PADTE5; ISSN: 1042-7147

DT Journal

LA English

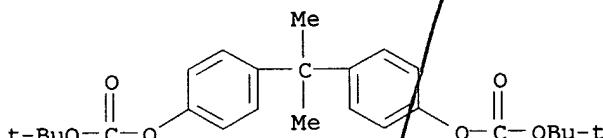
AB In a **pos.** **photoresist** composed of diphenyliodonium  
9,10-dimethoxyanthracene-2-sulfonate as a novel **photoacid**  
**generator**, bisphenol A protected with tert-butoxycarbonyl group as  
a dissoln. inhibitor, and a novolak resist matrix, the efficiency of  
photoacid generation and deprotective reaction were investigated by means  
of UV-visible and IR spectroscopies. The quant. measurement of  
photogenerated acid by using the acid-sensitive dye exhibited 0.18 as the  
quantum yield of acid generation in novolak resin film. The lithog.  
evaluation of this system as a chem. amplified resist was studied. The  
catalytic chain length for the acid-catalyzed deprotection step was detd.  
as about 100 when 10 min post-exposure bake (PEB) at 80.degree. was given.  
The sensitivity and the resoln. as a **pos.** **resist** are  
180 mJ/cm<sup>2</sup> and higher than 1 .mu.m, resp. under the PEB conditions  
mentioned above.

IT 117458-06-7

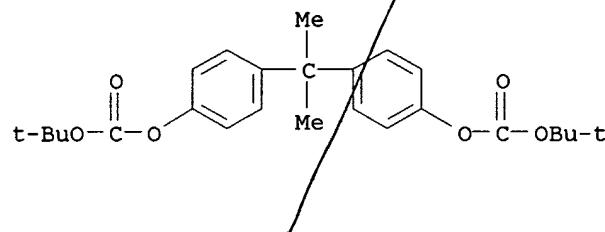
RL: USES (Uses)

(photoreaction of, in **pos.** novolak **photoresist**  
based on chem. amplification)

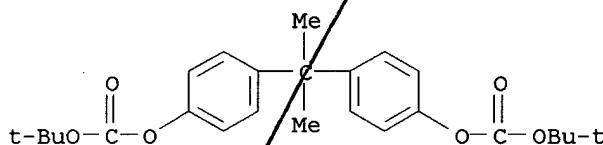
RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl)  
ester (9CI) (CA INDEX NAME)

L25 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2002 ACS  
 AN 1992:436357 CAPLUS  
 DN 117:36357  
 TI Determination of acid diffusion in chemical amplification **positive**  
 deep-UV **resists**  
 AU Schlegel, Leo; Ueno, Takumi; Hayashi, Nobuaki; Iwayanagi, Takao  
 CS Cent. Res. Lab., Hitachi Ltd., Kokubunji, 185, Japan  
 SO Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes  
 & Review Papers (1991), 30(11B), 3132-7  
 CODEN: JAPNDE; ISSN: 0021-4922  
 DT Journal  
 LA English  
 AB The diffusion of photogenerated acid in chem. amplification resist systems  
 was examd. by a new method which was developed for an easy estn. of the  
 diffusion range. The acid mobility was investigated for various process  
 conditions. Prebake and post-exposure bake conditions had strong  
 influence on the mobility of acid. The diffusion range of acid was much  
 larger than values estd. from the catalytic vol. Large differences in  
 diffusion characteristics were found for 2 different resist systems. The  
 diffusion of various sulfonic acids decreased strongly with increasing  
 mol. size.  
 IT 117458-06-7  
 RL: USES (Uses)  
 (chem. amplification **pos.** deep-UV **resists**  
 formulation contg. novolak resin and **photoacid**  
**generator** and dissoln. inhibitor of, detn. of acid diffusion  
 in)  
 RN 117458-06-7 CAPLUS  
 CN Carbonic acid, (1-methylethyldene)di-4,1-phenylene bis(1,1-dimethylethyl)  
 ester (9CI) (CA INDEX NAME)



L25 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2002 ACS  
AN 1991:32957 CAPLUS  
DN 114:32957  
TI Studies on the acid formation and deprotection reaction by novel sulfonates in a chemical amplification **positive** **photoresist**  
AU Schlegel, Leo; Ueno, Takumi; Shiraishi, Hiroshi; Hayashi, Nobuaki; Iwayanagi, Takao  
CS Cent. Res. Lab., Hitachi Ltd., Kokubunji, 185, Japan  
SO Journal of Photopolymer Science and Technology (1990), 3(3), 281-7  
CODEN: JSTEEW; ISSN: 0914-9244  
DT Journal  
LA English  
AB Tri(methanesulfonyloxy)benzene was investigated as a **photoacid generator** for a **pos.** deep-UV **resist** consisting of bisphenol A protected with tert-2-butoxycarbonyl groups and a novolak matrix **polymer**. UV- and IR-spectroscopic analyses of the deprotection reaction gave an **extraordinarily** high quantum yield of acid generation, suggesting sensitization by the novolak polymer. The facts that a similar system replacing the novolak with cellulose acetate was not photosensitive at all, and that the spectral sensitivity of the novolak-based resist coincided with the absorption spectrum of the novolak resin supported this suggestion.  
IT 117458-06-7  
RL: USES (Uses)  
(**photoresist** compn. contg. novolak and  
tris(methanesulfonateoxy)benzene **photoacid generator**  
and)  
RN 117458-06-7 CAPLUS  
CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)



L25 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2002 ACS  
 AN 1990:226587 CAPLUS  
 DN 112:226587  
 TI Acid formation and deprotection reaction by novel sulfonates in a chemical amplification **positive photoresist**  
 AU Schlegel, L.; Ueno, T.; Shiraishi, H.; Hayashi, N.; Iwayanagi, T.  
 CS Cent. Res. Lab., Hitachi Ltd., Kokubunji, 185, Japan  
 SO Chemistry of Materials (1990), 2 (3), 299-305  
 CODEN: CMATEX; ISSN: 0897-4756  
 DT Journal  
 LA English  
 AB A pos. deep-UV **photoresist** was composed of tris(methanesulfonyloxy)benzene as a novel **photoacid generator**, bisphenol A protected with tert-butoxycarbonyl groups as a dissoln. inhibitor, and a novolak **matrix polymer**. The deprotection reaction by the generated methanesulfonic acid was studied by using UV spectroscopy. The results were compared with exposure characteristics obtained with the same resist in lithog. The deprotection degree, the catalytic chain length of the deprotection reaction, and the quantum yield of the acid generation were detd. The amt. of photogenerated acid was unexpectedly high. This could be due to a sensitizing effect of the strongly absorbing novolak matrix polymer to generate the acid with high efficiency. The results show that sulfonic acid esters have very high possibilities for application in deep-UV resist materials.

IT 117458-06-7

RL: USES (Uses)

(**photoresist** compn. contg. methanesulfonyloxybenzene  
**photoacid generator** and, deprotection reaction of)

RN 117458-06-7 CAPLUS

CN Carbonic acid, (1-methylethylidene)di-4,1-phenylene bis(1,1-dimethylethyl) ester (9CI) (CA INDEX NAME)

